

## § 30.23

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Fahrenheit. Hence, corrections are necessary for hydrometer readings at temperatures other than 60 degrees Fahrenheit. Precision hydrometers shall be used for gauging spirits. Hydrometers and thermometers shall be used and the true percent of proof shall be determined in accordance with §30.31. Hydrometers are designated by letter according to range of proof and are provided in ranges and subdivisions of stems as follows:

Precision	Range	Subdivision
F .....	0 to 20 .....	0.2°
G .....	20 to 40 .....	0.2°
H .....	40 to 60 .....	0.2°
I .....	60 to 80 .....	0.2°
K .....	75 to 95 .....	0.2°
L .....	90 to 110 .....	0.2°
M .....	105 to 125 .....	0.2°
N .....	125 to 145 .....	0.2°
P .....	145 to 165 .....	0.2°
Q .....	165 to 185 .....	0.2°
R .....	185 to 206 .....	0.2°

Thermometers are designated by type according to range of degrees Fahrenheit and are provided in ranges and subdivisions of degrees as follows:

Type	Range	Subdivision
Pencil type .....	10° to 100° .....	1°
V-back .....	10° to 100° .....	1°
Glass shell (earlier model) .....	40° to 100° .....	½°
Glass shell (later model) ....	40° to 100° .....	¼°

(Sec. 201, Pub. L. 85-859, 72 Stat. 1358, as amended (26 U.S.C. 5204))

[T.D. ATF-198, 50 FR 8535, Mar. 1, 1985, as amended by T.D. ATF-381, 61 FR 37003, July 16, 1996]

### §30.23 Use of precision hydrometers and thermometers.

Care should be exercised to obtain accurate hydrometer and thermometer readings. In order to accomplish this result, the following precautions should be observed. Bulk spirits should be thoroughly agitated so that the test samples will be representative of the entire quantity. The hydrometers should be kept clean and free of any oily substance. Immediately before readings are taken, the glass cylinder containing the thermometer should be rinsed several times with the spirits which are to be gauged so as to bring both the cylinder and the thermometer to the temperature of the spirits (if time permits, it is desirable to bring

both the spirits and the instruments to room temperature). If the outer surface of the cylinder becomes wet, it should be wiped dry to avoid the cooling effect of rapid evaporation. During the readings the cylinder should be protected from drafts or other conditions which might affect its temperature or that of the spirits which it contains. The hands should not be placed on the cylinder in such a manner as to warm the liquid contained therein. The hydrometer should be inserted in the liquid and the hydrometer bulb raised and lowered from top to bottom 5 or 6 times to obtain an even temperature distribution over its surface, and, while the hydrometer bulb remains in the liquid, the stem should be dried and the hydrometer allowed to come to rest without wetting more than a few tenths degrees of the exposed stem. Special care should be taken to ascertain the exact point at which the level of the surface liquid intersects the scale of proof in the stem of the hydrometer. The hydrometer and thermometer should be immediately read, as nearly simultaneously as possible. In reading the hydrometer, a sighting should be made slightly below the plane of the surface of the liquid and the line of sight should then be raised slowly, being kept perpendicular to the hydrometer stem, until the appearance of the surface changes from an ellipse to a straight line. The point where this line intersects the hydrometer scale is the correct reading of the hydrometer. When the correct readings of the hydrometer and the thermometer have been determined, the true percent of proof shall be ascertained from Table 1. Another sample of the spirits should then be taken and be tested in the same manner so as to verify the proof originally ascertained. Hydrometer readings should be made to the nearest 0.05 degree and thermometer readings should be made to the nearest 0.1 degree, and instrument correction factors, if any, should be applied. It is necessary to interpolate in Table 1 for fractional hydrometer and thermometer readings.

*Example.* A hydrometer reads 192.85° at 72.10 °F. The correction factors for the hydrometer and the thermometer, respectively are

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minus 0.03° and plus 0.05°. The corrected reading, then, is 192.82° at 72.15 °F.

From Table 1:

193.0° at 72.0 °F.	=	190.2°
192.0° at 72.0 °F.	=	189.1°

Difference	=	1.1°
192.0° at 72.0 °F.	=	189.1°
192.0° at 73.0 °F.	=	188.9°

Difference	=	0.2°
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The hydrometer difference (1.1°) multiplied by the fractional degree of the hydrometer reading (0.82°)=0.902.

The temperature difference (0.2°) multiplied by the fractional degree of the temperature reading (0.15°)=0.03°.

Proof at 60° F.=189.1+0.902-0.03=189.972°=190.0°.

As shown, the final proof is rounded to the nearest tenth of a degree of proof. In such cases, if the hundredths decimal is less than five, it will be dropped; if it is five or over, a unit will be added.

(Sec. 201, Pub. L. 85-859, 72 Stat. 1358, as amended (26 U.S.C. 5204))

[T.D. ATF-198, 50 FR 8535, Mar. 1, 1985, as amended by T.D. ATF-381, 61 FR 37004, July 16, 1996]

### § 30.24 Specific gravity hydrometers.

(a) The specific gravity hydrometers furnished by proprietors to appropriate ATF officers shall conform to the standard specifications of the American Society for Testing and Materials (ASTM) for such instruments. Such specific gravity hydrometers shall be of a precision grade, standardization temperature 60 °/60 °F., and provided in the following ranges and subdivisions:

Range	Subdivision
1.0000 to 1.0500 .....	0.0005
1.0500 to 1.1000 .....	0.0005
1.1000 to 1.1500 .....	0.0005
1.1500 to 1.2000 .....	0.0005
1.2000 to 1.2500 .....	0.0005

No instrument shall be in error by more than 0.0005 specific gravity.

(b) A certificate of accuracy prepared by the instrument manufacturer for the instrument shall be furnished to the appropriate ATF officer.

(c) *Incorporation by reference.* The "Standard Specification for ASTM Hydrometers," (E 100-72 (1978)), published in the "1980 Annual Book of ASTM Standards" (STP 25 1062 (1980)), is incorporated by reference in this part. This incorporation by reference was approved by the Director of the Federal

Register on March 23, 1981. This publication may be inspected at the Office of Federal Register, 800 North Capitol Street, NW., suite 700, Washington, DC, and is available from the American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania 19103.

(Sec. 201, Pub. L. 85-859, 72 Stat. 1358, as amended (26 U.S.C. 5204); 80 Stat. 383, as amended (5 U.S.C. 552(a)))

[T.D. ATF-198, 50 FR 8535, Mar. 1, 1985, as amended by T.D. ATF-381, 61 FR 37004, July 16, 1996]

### § 30.25 Use of precision specific gravity hydrometers.

The provisions of § 30.23 respecting the care, handling, and use of precision instruments shall be followed with respect to the care, handling, and use of precision grade specific gravity hydrometers. Specific gravity hydrometers shall be read to the nearest subdivision. Because of temperature density relationships and the selection of the standardization temperature of 60 °/60 °F., the specific gravity readings will be greater at temperatures below 60 degrees Fahrenheit and less at temperatures above 60 degrees Fahrenheit. Hence, correction of the specific gravity readings will be made for temperature other than 60 degrees Fahrenheit. Such correction may be ascertained by dividing the specific gravity hydrometer reading by the applicable correction factor in Table 7.

*Example:* The specific gravity hydrometer reading is 1.1525, the thermometer reading is 68 degrees Fahrenheit, and the true proof of the spirits is 115 degrees. The correct specific gravity reading will be ascertained as follows:

(a) From Table 7, the correction factor for 115° proof at 68 °F. is 0.996.

(b) 1.1525 divided by 0.996=1.1571, the corrected specific gravity.

(Sec. 201, Pub. L. 85-859, 72 Stat. 1358, as amended (26 U.S.C. 5204))

## Subpart D—Gauging Procedures

### § 30.31 Determination of proof.

(a) *General.* The proof of spirits shall be determined to the nearest tenth degree which shall be the proof used in determining the proof gallons.